

Increasing the Use of End Tidal Carbon Dioxide (ETCO₂) for Moderate Sedation

BACKGROUND

- Short acting analgesia and sedation medications are used during many procedures in the Emergency Department (ED)
- Patients require close monitoring for abnormal vital signs and other adverse occurrences, such as respiratory depression and apnea
- Use of ETCO₂ is recommended by the Emergency Nurses Association (ENA) for moderate sedation
- ENA evidence-based Clinical Practice Guideline (2015) determined that capnography during moderate sedation detects respiratory depression and apnea faster than vital signs, pulse oximetry, and clinical assessment during short acting analgesia and sedation

LOCAL CONTEXT

- Results of Emergency Care Center (ECC) medical record audits (9/1/19-7/30/20) found that only 23% of patients undergoing moderate sedation had ETCO₂ used during the procedure

PURPOSE

- Increase the utilization of ETCO₂ during moderation sedation procedures. This will allow earlier identification of deterioration and allow RNs to intervene quicker

REFERENCES

available upon request: Christiane.Pepitone@stjoe.org

METHODS

Design: Evidence-based quality improvement

Participants: Emergency Care Center RNs

Procedure:

- Education provided to RNs using assigned modules and emailed power point presentations on the use, setup, indications and interventions of ETCO₂ for patients receiving moderate sedation
- Self-auditing tool
 - Developed
 - Completed by primary RN performing a moderate sedation procedure
 - Contents:
 - Was a consent form signed for the procedure?
 - Was ETCO₂ used? If not, what is the reason?
 - Was ETCO₂ documented per policy? For how long?
 - Was there an adverse event?
- Follow up and coaching was done when ETCO₂ was not used or documented per policy
- Collection and Analysis: A minimum of six audits were preformed monthly on the records of patients receiving moderate sedation and use of ETCO₂



RESULTS

- 23% of all audited charts between 9/19 -7/20 had ETCO₂ documented per policy
- ETCO₂ education was sent out in January, February and July 2020. The “Self Auditing Tool” was implemented in Feb 2021
- There was only a 30% use of ETCO₂ for the month of Feb 2021, but for months March through July 2021, use of ETCO₂ increased to 67%
- Jan and Feb 2021 had 41% use, RNs citing machine not available. In March, added two new machines which may have contributed to the increase in use and compliance
- ETCO₂ use for July 2021 was 80%
- RNs noted and appropriately responded to abnormal ETCO₂. Patient condition stabilized with return to baseline

IMPLICATIONS FOR PRACTICE/DISCUSSION

- The use of ETCO₂ during moderate sedation is an ENA Clinical Practice Guideline and best practice
- Following COVID-19, the ECC will begin to use ETCO₂ in intubated patients to measure effectiveness of compressions and as a measure of ROSC
- The opportunity exists to improve the use of ETCO₂ for moderate sedation
- Patients who predominately mouth breath result in the inability of nasal sensor to pick up ETCO₂, this may provide inaccurate readings

CONCLUSION

- The use of ETCO₂ in theory and in practice is able to detect respiratory depression faster than pulse oximetry, allowing timely RN intervention with excellent patient outcomes